CLAIMS

1. Magnetic sensor to determine the position of a cellular phone (2) in linear movement along an axis of translation (T), the sensor comprising:

- a magnetic circuit within which at least a magnetic induction (I_1, I_2) is created along a direction perpendicular to the axis;
- a measuring cell fitted to a magnetic circuit, sensitive to the value of the magnetic induction flux and capable of measuring the variations in the value of the magnetic induction flux consecutive with the reluctance variations of the magnetic circuit in order to determine the linear position of the cellular phone (2) along the axis of translation (T);

characterised in that it comprises a single delimiting fixed magnetic circuit between two fixed pole parts:

- a variable air gap (4) within which at least a magnetic induction (I_1, I_2) is created that extends along a length parallel to the axis of translation (T) and at least equal to the travel to be measured (C) of the cellular phone, the variable air gap (4) being capable of allowing the linear movement of the cellular phone (2) which is equipped with means (5) for modifying the reluctance of said variable air gap, mechanically independent of said sensor;
- and a measurable air gap (7) to which the measuring cell is fitted.

2. Magnetic sensor, characterised in that the magnetic circuit (3) delimits a variable air gap (4) within which a first magnetic induction (I_1) is created that extends along a given length (Z_1) parallel to the axis of translation (T) and along a direction perpendicular to the axis and a second

magnetic induction (I_2) extending along the side of the first induction (I_1), along a given length (Z_2) parallel to the axis of translation and along an opposite direction to the first induction, the sum of the lengths (Z_1, Z_2) being at least equal to the travel to be measured (C) of the cellular phone.

3. Magnetic sensor according to claim 1, characterised in that at least one and preferably the two pole pieces (8) are equipped with a magnet (11, 12) creating the magnetic induction along a direction perpendicular to the axis.

4. Magnetic sensor according to claim 1, characterised in that the variable air gap (4) allows to displace the cellular phone (2) whose means for modifying the reluctance (5) are constituted by the parts (5_1, 5_2) of the cellular phone that have sections of different values.

5. Magnetic sensor according to claim 4, characterised in that the variable air gap (4) allows to displace the cellular phone (2) whose means for modifying the reluctance (5) are constituted by the terminal part (2_1) of the cellular phone (2) delimited by its free end.

6. Magnetic sensor according to claim 4 or 5, characterised in that the variable air gap (4) allows to displace the cellular phone (2) whose means for modifying the reluctance (5) are constituted by the parts that each have a revolution section.

7. Magnetic sensor according to claim 4 or 5, characterised in that the variable air gap (4) allows to

displace the cellular phone (2) whose means for modifying the reluctance (5) are formed by the zones (2_1, 5_1, 5_2) with sections of constant value in order to obtain a linear response from the sensor.

8. Magnetic sensor according to claim 4 or 5, characterised in that the variable air gap (4) allows to displace the cellular phone (2) whose means for modifying the reluctance (5) are formed by at least one zone with sections of non-constant value in order to obtain a non-linear response from the sensor.

9. Magnetic sensor according to claims 2 and 5, characterised in that the variable air gap (4) allows to displace the cellular phone (2) of which one part of the cellular phone (2) is positioned so as to extend at mid-travel, symmetrically in relation to the tie line (L) between the two zones (Z_1, Z_2) of magnetic induction in opposite directions.

10. Magnetic sensor according to claim 5, characterised in that the variable air gap (4) allows to displace the cellular phone (2) of which one part of the cellular phone is arranged so that the surface of the junction between said parts (5_1, 5_2) of the cellular phone always extend within the induction zone (Z_1, Z_2) whilst the cellular phone is travelling.

11. Device for determining the position of a cellular phone (2) in linear movement along an axis of translation (T), characterised in that it comprises:

- a sensor (1) according to one of claims 1 to 10;
- and means for modifying the reluctance (5) fitted to the cellular phone (2).